Test Report

Product Name	Wireless USB Dongle
Model No.	BlueW-2310U
FCC ID	V83BLUEW-2310U

Applicant	SYNTEK SEMICONDUCTOR CO., LTD.
Address	10F, No.1, Alley30, LANE358, Rui-Guang Road, Neihu, Taipei, Taiwan, R.O.C.

Date of Receipt	Dec. 18, 2008
Issued Date	Dec. 29, 2008
Report No.	08C251R-RFUSP05V01
Version	V1.0

Test Report Certification

Issued Date: Dec. 29, 2008
Report No.: 08C251R-RFUSP05V01

Accredited by NIST (NVLAP)
NVLAP Lab Code: 200533-0

Product Name	Wireless USB Dongle
Applicant	SYNTEK SEMICONDUCTOR CO., LTD.
Address	10F, No.1, Alley30, LANE358, Rui-Guang Road, Neihu, Taipei, Taiwan, R.O.C.
Manufacturer	SYNTEK SEMICONDUCTOR CO., LTD.
Model No.	BlueW-2310U
Rated Voltage	AC 120V/60Hz
Working Voltage	DC 5V(Power by USB)
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2007 ANSI C63.4: 2003
Test Result	Complied

NVLAP Lab Code: 200533-0

Test results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.
This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Documented By : Genie Chang
(Senior Adm. Specialist / Genie Chang)

Tested By : Eason Hung
(Assistant Engineer / Eason Hung)

Approved By :
(Manager / Vincent Lin)

Testing Laboratory
0914

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Wireless USB Dongle
Model No.	BlueW-2310U
FCC ID	V83BLUEW-2310U
Frequency Range	2412-2462MHz
Channel Number	802.11b/g: 11
Data Speed	IEEE 802.11b – 1, 2, 5.5, 11Mbps IEEE 802.11g – 6, 9, 12, 18, 24, 36 48, 54Mbps
Type of Modulation	802.11b-DSSS (DBPSK,DQPSK,CCK) 802.11g-OFDM (BPSK,QPSK,16QAM,64QAM)
Antenna Type	Chip Antenna
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto

Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	Yageo	CAN4311881042453K	3.0dBi for 2.4 GHz

Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 1:	2412 MHz	Channel 5:	2432 MHz	Channel 9:	2452 MHz
Channel 2:	2417 MHz	Channel 6:	2437 MHz	Channel 10:	2457 MHz
Channel 3:	2422 MHz	Channel 7:	2442 MHz	Channel 11:	2462 MHz
Channel 4:	2427 MHz	Channel 8:	2447 MHz		

Note:

1. The EUT is a Wireless USB Dongle with a built-in 2.4GHz WLAN transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11b is 1Mbps and 802.11g is 6Mbps)
4. These tests are conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for direct sequence spread spectrum devices.

1.2. Operational Description

The EUT is a Wireless USB Dongle with 11 channels. This device provides four kinds of transmitting speed 1, 2, 5.5 and 11Mbps. The modulation of device is BPSK, QPSK and CCK (IEEE 802.11b) and eight kinds of transmitting speed 6, 9, 12, 18, 24, 36, 48 and 54Mbps are provided. The technology of this device used is OFDM (IEEE 802.11g).

The device adapts direct sequence spread spectrum modulation. The antenna provides diversity function to improve the receiving function.

This Wireless USB Dongle, compliant with IEEE 802.11b and IEEE 802.11g, is a high-efficiency Wireless LAN adapter. It allows your computer to connect to a wireless network and to share resources, such as files or printers without being bound to the network wires. Operation in 2.4GHz Direst Sequence Spread Spectrum (DSSS) radio transmission, the Wireless USB Dongle Wired Equivalent Protection (WEP) algorithm is used. In addition, its standard compliance ensures that it can communicate with any IEEE 802.11b and IEEE 802.11g network.

The user can simultaneously use WLAN&BT function under Normal operation.

Test Mode	Mode 1: Transmitter 802.11b
	Mode 2: Transmitter 802.11g

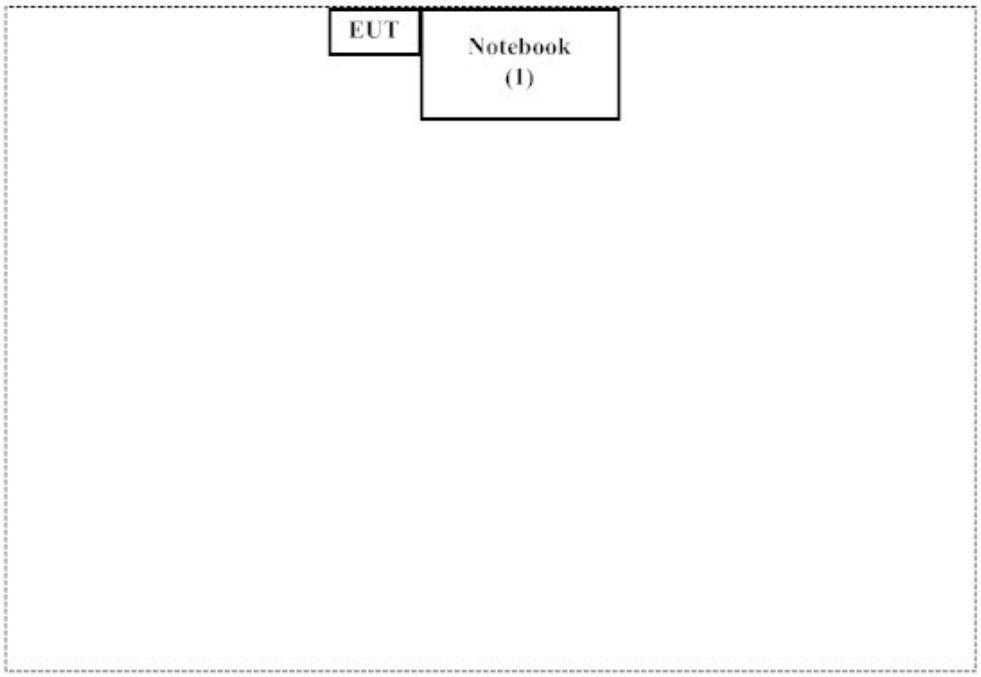
1.3. Tested System Datails

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1.	Notebook PC	DELL	D630	00144-023-351-375	DoC	Non-Shielded, 0.8m

Signal Cable Type		Signal cable Description
A.	N/A	N/A

1.4. Configuration of Test System



1.5. EUT Exercise Software

(1) Setup the EUT as shown in Section 1.4

(2) Execute “Launch Baseband Test” on the EUT.

(3) Configure the test mode, the test channel, and the data rate.

(4) Press “OK” to start the continuous Transmit.

(5) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

Site Description: File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 92195

Accreditation on NVLAP
NVLAP Lab Code: 200533-0

Site Name: Quietek Corporation

Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
Lin-Kou Shiang, Taipei,
Taiwan, R.O.C.
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

FCC Accreditation Number: TW1014

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0914

2. Conducted Emission

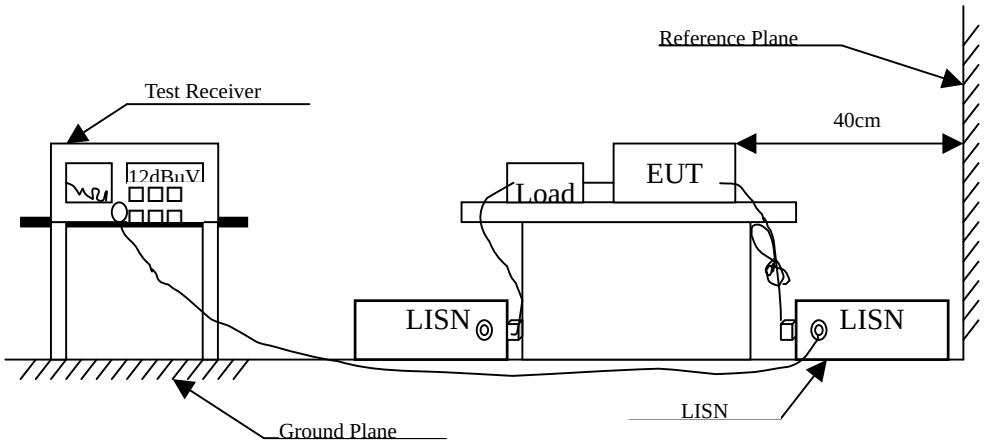
2.1. Test Equipment

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/17	May, 2008	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2008	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2008	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2008	
5	No.1 Shielded Room			N/A	

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	uV	dBuV
0.15 - 0.50	66-56(註)	56-46(註)
0.50-5.0	56	46
5.0 - 30	60	50

2.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs.)

Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

Product : Wireless USB Dongle
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 1: Transmitter 802.11b (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 1					
Quasi-Peak					
0.162	9.750	31.990	41.740	-23.917	65.657
0.345	9.650	29.750	39.400	-21.029	60.429
0.779	9.650	38.650	48.300	-7.700	56.000
0.908	9.670	31.360	41.030	-14.970	56.000
8.170	9.780	20.010	29.790	-30.210	60.000
17.568	9.990	20.660	30.650	-29.350	60.000
Average					
0.162	9.750	24.330	34.080	-21.577	55.657
0.345	9.650	21.190	30.840	-19.589	50.429
0.779	9.650	20.620	30.270	-15.730	46.000
0.908	9.670	23.680	33.350	-12.650	46.000
8.170	9.780	14.150	23.930	-26.070	50.000
17.568	9.990	13.430	23.420	-26.580	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Wireless USB Dongle
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 1: Transmitter 802.11b (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 2					
Quasi-Peak					
0.170	9.743	29.720	39.463	-25.966	65.429
0.201	9.716	30.410	40.126	-24.417	64.543
0.439	9.647	34.210	43.857	-13.886	57.743
0.630	9.650	28.430	38.080	-17.920	56.000
0.759	9.664	30.890	40.554	-15.446	56.000
3.056	9.690	17.960	27.650	-28.350	56.000
Average					
0.170	9.743	21.150	30.893	-24.536	55.429
0.201	9.716	26.620	36.336	-18.207	54.543
0.439	9.647	23.320	32.967	-14.776	47.743
0.630	9.650	21.780	31.430	-14.570	46.000
0.759	9.664	22.010	31.674	-14.326	46.000
3.056	9.690	11.820	21.510	-24.490	46.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Wireless USB Dongle
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 2: Transmitter 802.11g (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 1					
Quasi-Peak					
0.150	9.766	33.140	42.906	-23.094	66.000
0.177	9.730	30.140	39.869	-25.360	65.229
0.259	9.670	32.050	41.720	-21.166	62.886
0.545	9.640	36.790	46.430	-9.570	56.000
0.658	9.630	35.210	44.840	-11.160	56.000
1.209	9.670	31.160	40.830	-15.170	56.000
Average					
0.150	9.766	21.980	31.746	-24.254	56.000
0.177	9.730	21.910	31.639	-23.590	55.229
0.259	9.670	22.510	32.180	-20.706	52.886
0.545	9.640	28.170	37.810	-8.190	46.000
0.658	9.630	22.940	32.570	-13.430	46.000
1.209	9.670	21.980	31.650	-14.350	46.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Wireless USB Dongle
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 2: Transmitter 802.11g (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 2					
Quasi-Peak					
0.166	9.748	27.670	37.417	-28.126	65.543
0.193	9.721	41.730	51.451	-13.320	64.771
0.306	9.660	26.440	36.100	-25.443	61.543
0.545	9.640	18.460	28.100	-27.900	56.000
0.685	9.650	23.040	32.690	-23.310	56.000
1.244	9.670	41.820	51.490	-4.510	56.000
Average					
0.166	9.748	14.390	24.137	-31.406	55.543
0.193	9.721	20.910	30.631	-24.140	54.771
0.306	9.660	13.900	23.560	-27.983	51.543
0.545	9.640	10.120	19.760	-26.240	46.000
0.685	9.650	12.000	21.650	-24.350	46.000
1.244	9.670	21.380	31.050	-14.950	46.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

3. Peak Power Output

3.1. Test Equipment

The following test equipments are used during the radiated emission tests:

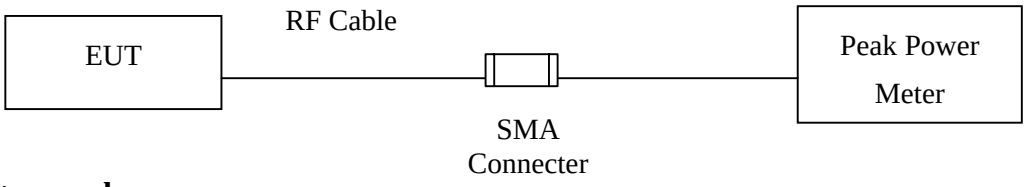
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2008
X	Power Sensor	Anritsu	MA2491A/034457	May, 2008

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

2. The test instruments marked with "X" are used to measure the final test results.

3.2. Test Setup

Conducted Measurement



3.3. Test procedures

The EUT was tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

3.4. Limits

The maximum peak power shall be less 1 Watt.

3.5. Uncertainty

± 1.27 dB

3.6. Test Result of Peak Power Output

Product : Wireless USB Dongle
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter 802.11b

Cable loss=0.5dB		Peak Power Output Value (dBm)				
Channel No.	Frequency (MHz)	Data Rate				Required Limit
		1 Mbps	2Mbps	5.5Mbps	11Mbps	
1	2412.00	17.15	--	--	--	1Watt= 30 dBm
6	2437.00	17.14	17.12	17.02	16.69	1Watt= 30 dBm
11	2462.00	17.18	--	--	--	1Watt= 30 dBm

Note: Peak Power Output Value =Reading value on peak power meter + cable loss

Product : Wireless USB Dongle
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter 802.11g

Cable loss=0.5dB		Peak Power Output Value (dBm)								
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps	
1	2412.00	24.11		--	--	--	--	--	--	1Watt= 30 dBm
6	2437.00	24.09	23.9	23.57	23.17	22.61	21.98	21.77	21.36	1Watt= 30 dBm
11	2462.00	24.12	--	--	--	--	--	--	--	1Watt= 30 dBm

Note: Peak Power Output Value =Reading value on peak power meter + cable loss

4. Radiated Emission

4.1. Test Equipment

The following test equipments are used during the radiated emission test:

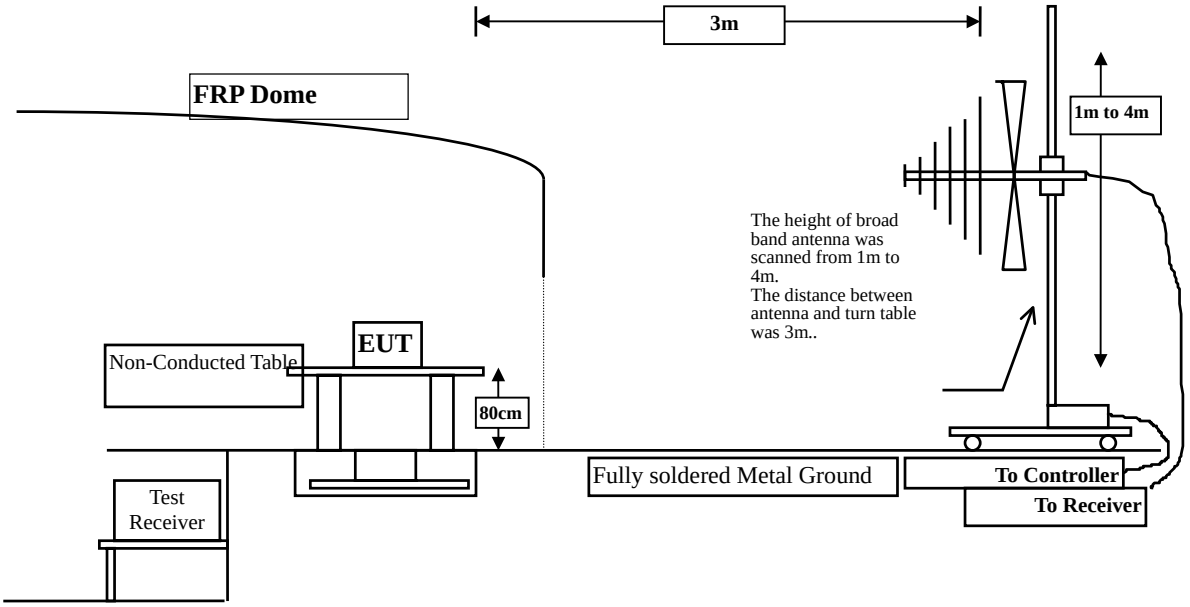
Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Site # 1		Test Receiver	R & S	ESCS 30 / 825442/14	May, 2008
		Spectrum Analyzer	Advantest	R3261C / 71720140	May, 2008
		Pre-Amplifier	HP	8447D/3307A01812	May, 2008
		Bilog Antenna	Chase	CBL6112B / 12452	Sep., 2008
		Horn Antenna	EM	EM6917 / 103325	May, 2008
Site # 2		Test Receiver	R & S	ESCS 30 / 825442/17	May, 2008
		Spectrum Analyzer	Advantest	R3261C / 71720609	May, 2008
		Pre-Amplifier	HP	8447D/3307A01814	May, 2008
		Bilog Antenna	Chase	CBL6112B / 2455	Sep., 2008
		Horn Antenna	EM	EM6917 / 103325	May, 2008
Site # 3	X	Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2008
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
	X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2008
	X	Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2008
	X	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2008
	X	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2008
	X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2008
	X	Pre-Amplifier	HP	8449B / 3008A01123	July, 2008

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

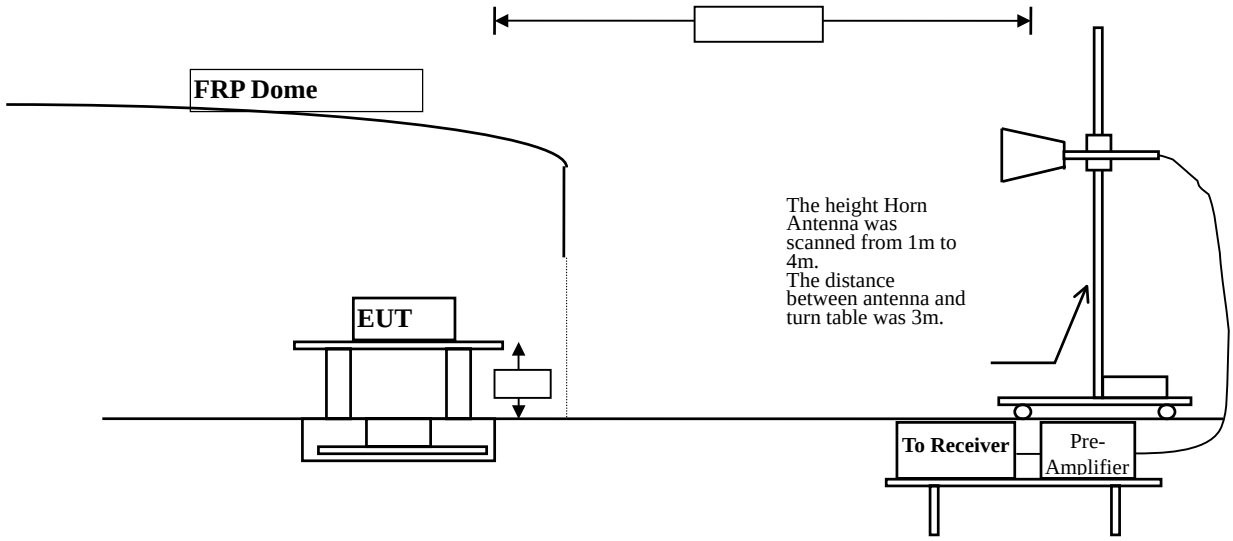
2. The test instruments marked with “X” are used to measure the final test results.

4.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks: E field strength (dBuV/m) = 20 log E field strength (uV/m)

4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2003 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB beamwidth of the antenna.

The worst radiated emission is measured on the Final Measurement.

The frequency range from 30MHz to 10th harminics is checked.

4.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

4.6. Test Result of Radiated Emission

Product : Wireless USB Dongle
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter 802.11b (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	-0.220	48.780	48.560	-25.440	74.000
7236.000	3.144	42.140	45.284	-28.716	74.000
9648.000	5.668	42.240	47.908	-26.092	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	-0.220	51.590	51.370	-22.630	74.000
7236.000	3.144	40.460	43.604	-30.396	74.000
9648.000	5.668	43.090	48.758	-25.242	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless USB Dongle
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter 802.11b (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	-0.268	48.790	48.522	-25.478	74.000
7311.000	3.285	41.190	44.476	-29.524	74.000
9748.000	6.190	42.100	48.290	-25.710	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4874.000	-0.268	53.030	52.762	-21.238	74.000
7311.000	3.285	41.090	44.376	-29.624	74.000
9748.000	6.190	42.630	48.820	-25.180	74.000
Average					
Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless USB Dongle
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter 802.11b (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	0.105	49.080	49.185	-24.815	74.000
7386.000	3.644	41.160	44.805	-29.195	74.000
9848.000	6.582	41.590	48.172	-25.828	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4924.000	0.105	55.030	55.135	-18.865	74.000
7386.000	3.644	40.430	44.075	-29.925	74.000
9848.000	6.582	43.280	49.862	-24.138	74.000
Average					
Detector:					
4924.000	0.105	51.520	51.625	-2.375	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless USB Dongle
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter 802.11g (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	-0.229	44.660	44.431	-29.569	74.000
7236.000	3.182	42.790	45.972	-28.028	74.000
9648.000	5.798	42.200	47.999	-26.001	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	-0.229	48.100	47.871	-26.129	74.000
7236.000	3.182	41.950	45.132	-28.868	74.000
9648.000	5.798	42.630	48.429	-25.571	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless USB Dongle
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter 802.11g (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	-0.268	47.590	47.322	-26.678	74.000
7311.000	3.285	41.550	44.836	-29.164	74.000
9748.000	6.190	42.980	49.170	-24.830	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4874.000	-0.268	50.870	50.602	-23.398	74.000
7311.000	3.285	42.230	45.516	-28.484	74.000
9748.000	6.190	43.050	49.240	-24.760	74.000
Average					
Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless USB Dongle
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter 802.11g (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	0.105	47.730	47.835	-26.165	74.000
7386.000	3.644	42.170	45.815	-28.185	74.000
9848.000	6.582	42.620	49.202	-24.798	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	0.105	50.670	50.775	-23.225	74.000
7386.000	3.644	41.640	45.285	-28.715	74.000
9848.000	6.582	44.200	50.782	-23.218	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless USB Dongle
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter 802.11b (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
406.360	0.547	31.104	31.651	-14.349	46.000
507.240	2.340	30.180	32.520	-13.480	46.000
699.300	2.780	36.650	39.430	-6.570	46.000
809.880	6.010	30.492	36.502	-9.498	46.000
901.060	5.603	28.837	34.440	-11.560	46.000
963.140	6.822	28.078	34.900	-19.100	54.000
Vertical					
528.580	0.970	30.858	31.828	-14.172	46.000
664.380	-1.134	31.667	30.533	-15.467	46.000
699.300	-0.200	35.703	35.503	-10.497	46.000
747.800	1.457	30.203	31.660	-14.340	46.000
842.860	2.080	26.289	28.369	-17.631	46.000
932.100	3.197	26.134	29.331	-16.669	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless USB Dongle
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter 802.11g (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
507.240	2.340	29.329	31.669	-14.331	46.000
664.380	1.726	31.917	33.643	-12.357	46.000
749.740	3.753	31.628	35.381	-10.619	46.000
809.880	6.010	29.846	35.856	-10.144	46.000
901.060	5.603	29.980	35.583	-10.417	46.000
963.140	6.822	27.905	34.727	-19.273	54.000
Vertical					
528.580	0.970	31.900	32.870	-13.130	46.000
604.240	1.966	27.384	29.351	-16.649	46.000
666.320	-1.110	32.533	31.423	-14.577	46.000
747.800	1.457	30.606	32.063	-13.937	46.000
920.460	3.022	26.933	29.955	-16.045	46.000
968.960	3.740	26.901	30.641	-23.359	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

5. RF antenna conducted test

5.1. Test Equipment

The following test equipments are used during the radiated emission tests:

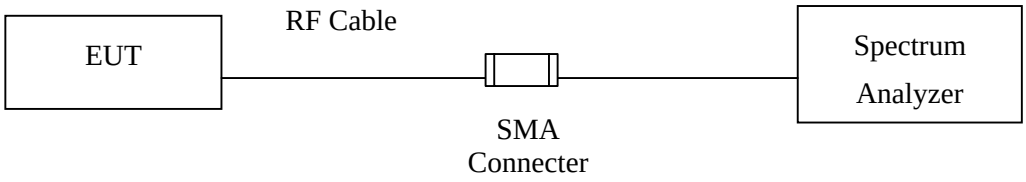
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
X	Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2008
	Spectrum Analyzer	Agilent	N9010A / MY48030495	April, 2008

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

2. The test instruments marked with "X" are used to measure the final test results.

5.2. Test Setup

RF antenna Conducted Measurement:



5.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.4. Test Procedure

The EUT was tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

5.5. Uncertainty

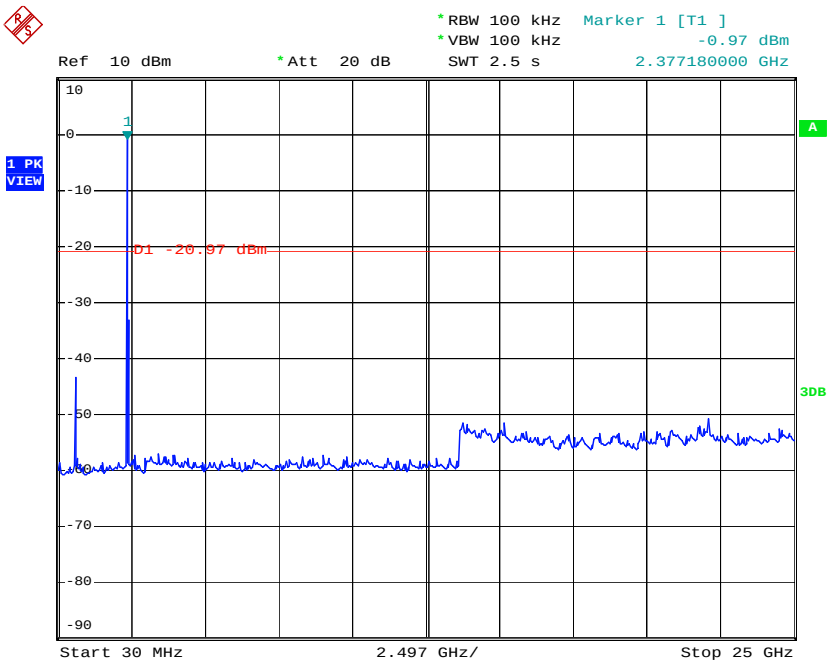
The measurement uncertainty

Conducted is defined as ± 1.27dB

5.6. Test Result of RF antenna conducted test

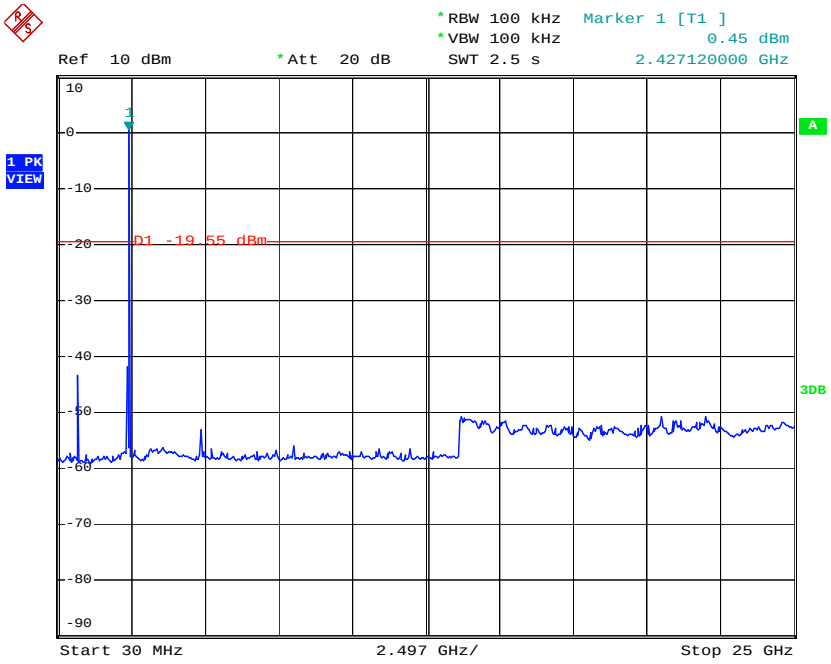
Product : Wireless USB Dongle
Test Item : RF antenna conducted test
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter 802.11b

Channel 01 (2412MHz)



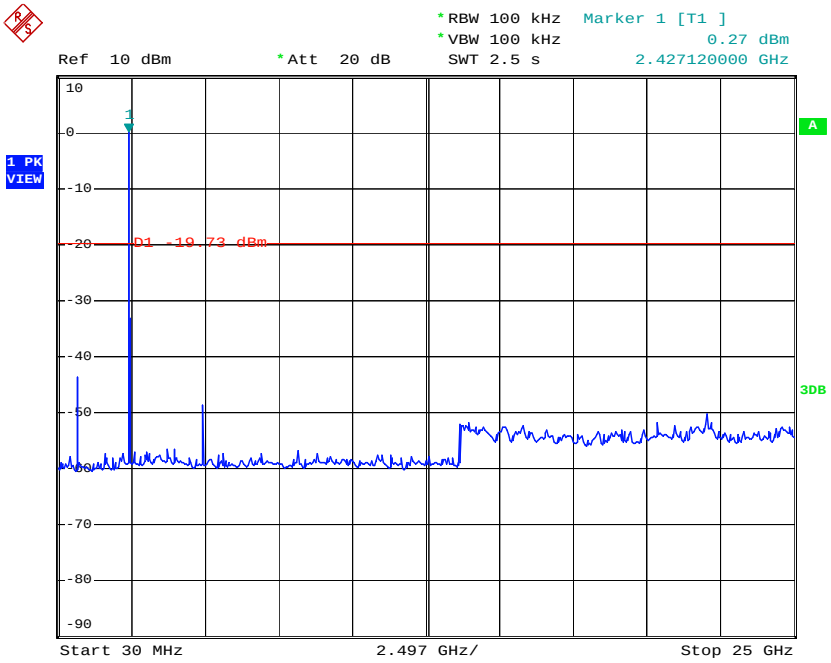
Date: 29.DEC.2008 15:10:41

Channel 06 (2437MHz)



Date: 29.DEC.2008 15:16:34

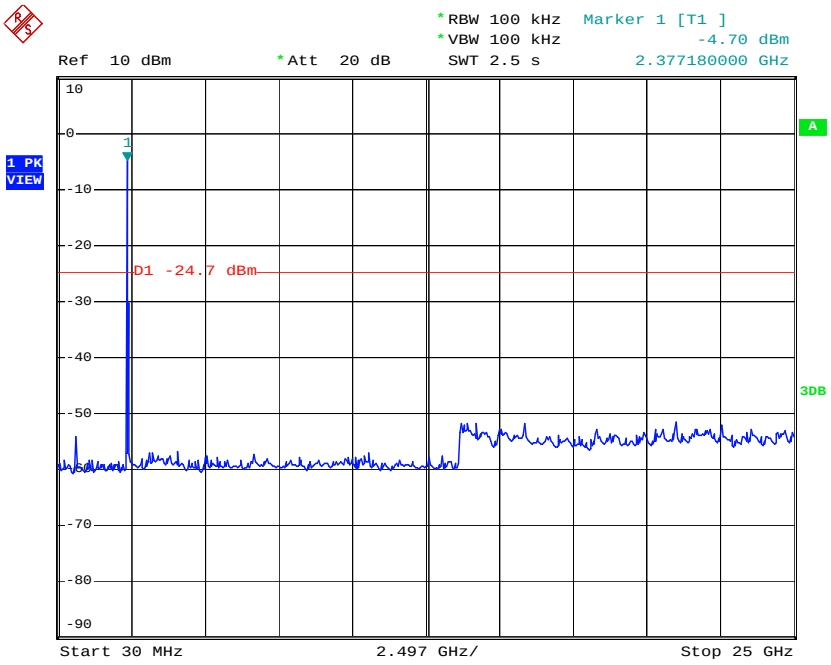
Channel 11 (2462MHz)



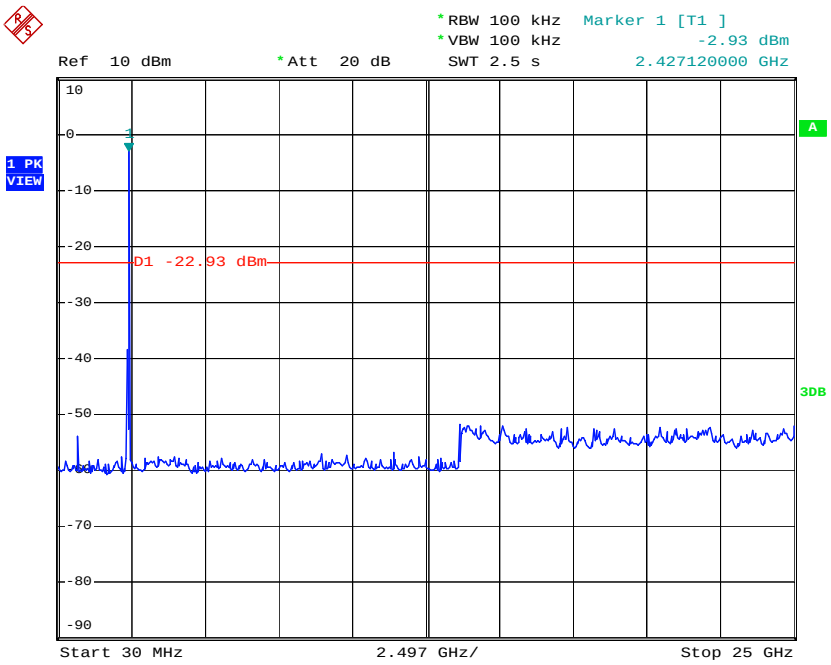
Date: 29.DEC.2008 15:17:21

Product : Wireless USB Dongle
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter 802.11g

Channel 01 (2412MHz)

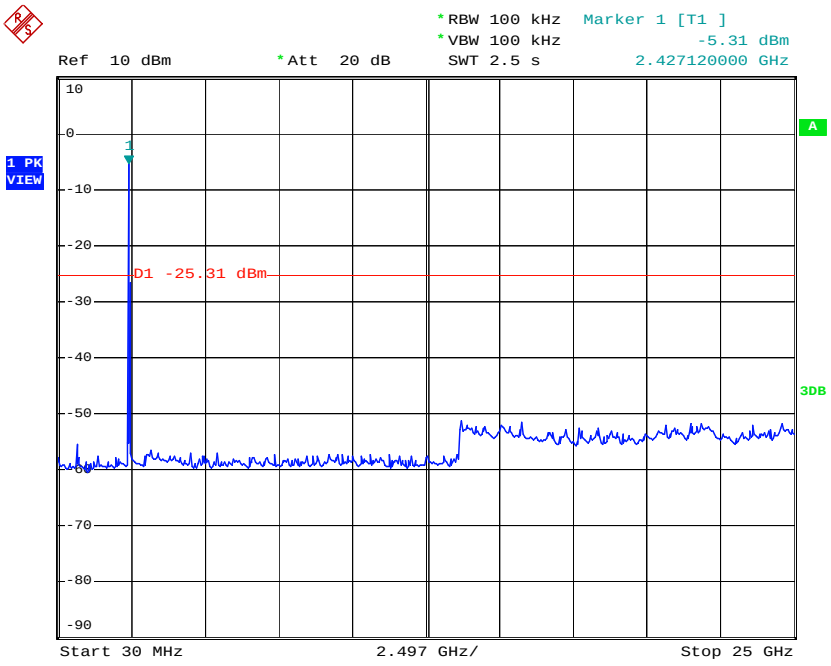


Channel 06 (2437MHz)



Date: 29.DEC.2008 15:05:39

Channel 11 (2462MHz)



Date: 29.DEC.2008 15:06:53

6. Radiated Emission Band Edge

6.1. Test Equipment

The following test equipments are used during the band edge tests:

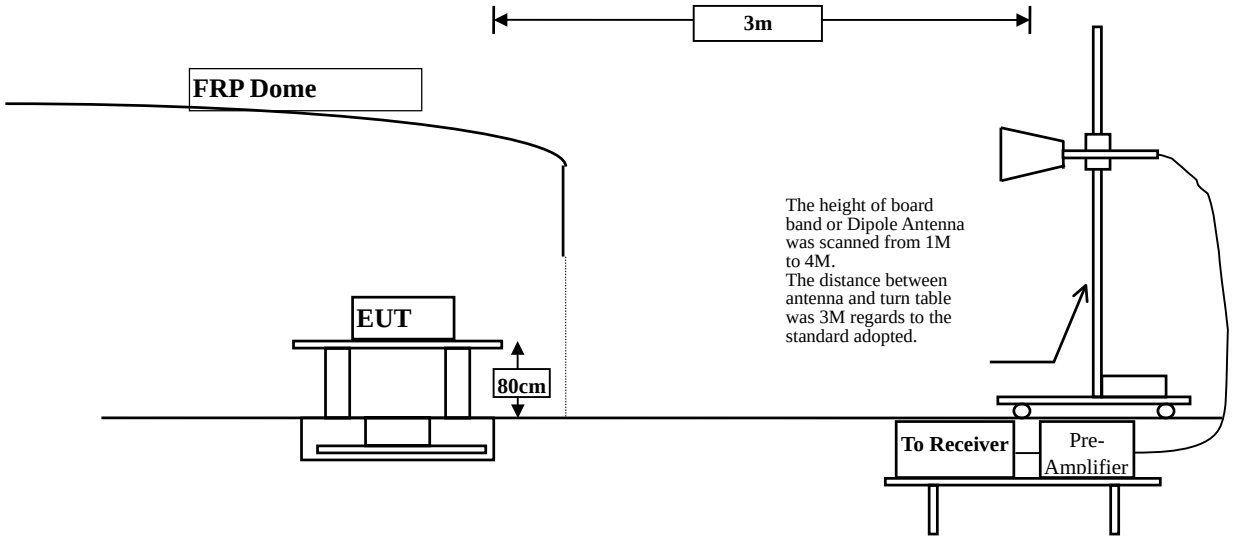
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2008
X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2008
X	Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2008
X	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2008
X	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2008
X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2008
X	Pre-Amplifier	HP	8449B / 3008A01123	July, 2008

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

2. The test instruments marked with "X" are used to measure the final test results.

6.2. Test Setup

RF Radiated Measurement:



6.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

6.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.
The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2003 on radiated measurement.

6.5. Uncertainty

± 3.9 dB above 1GHz

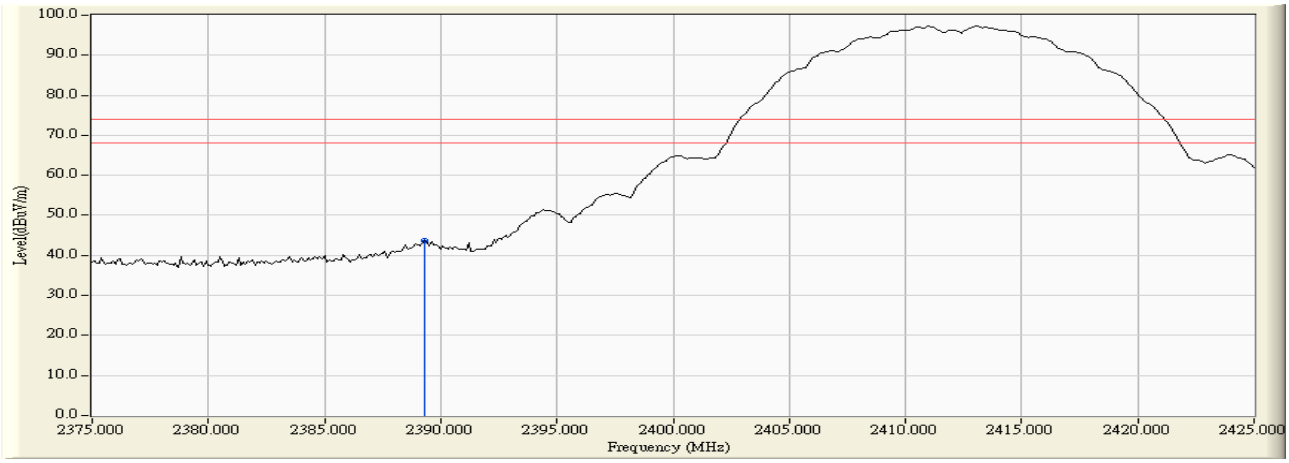
6.6. Test Result of Band Edge

Product : Wireless USB Dongle
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter 802.11b

RF Radiated Measurement (Horizontal):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1 (Peak)	2389.300	-6.770	50.543	43.773	74.00	54.00	Pass

Figure Channel 1: **Horizontal (**Peak**)**



Note:

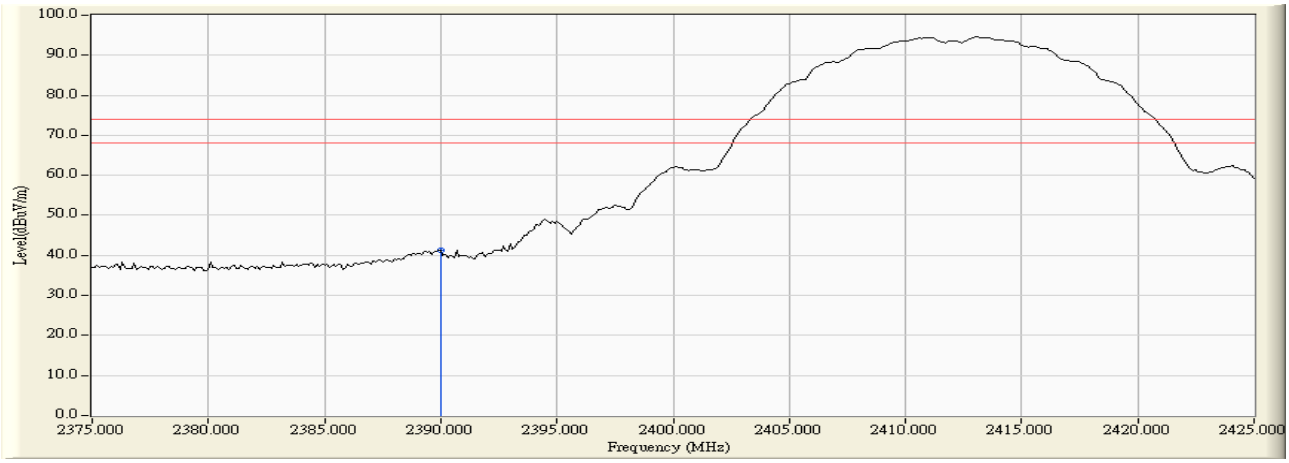
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless USB Dongle
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter 802.11b

RF Radiated Measurement (Vertical):

Channel	Frequency (MHz)	Correct Fcator (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1 (Peak)	2390.000	-6.769	47.924	41.156	74.00	54.00	Pass

Figure Channel 1: **Vertical (**Peak**)**



Note:

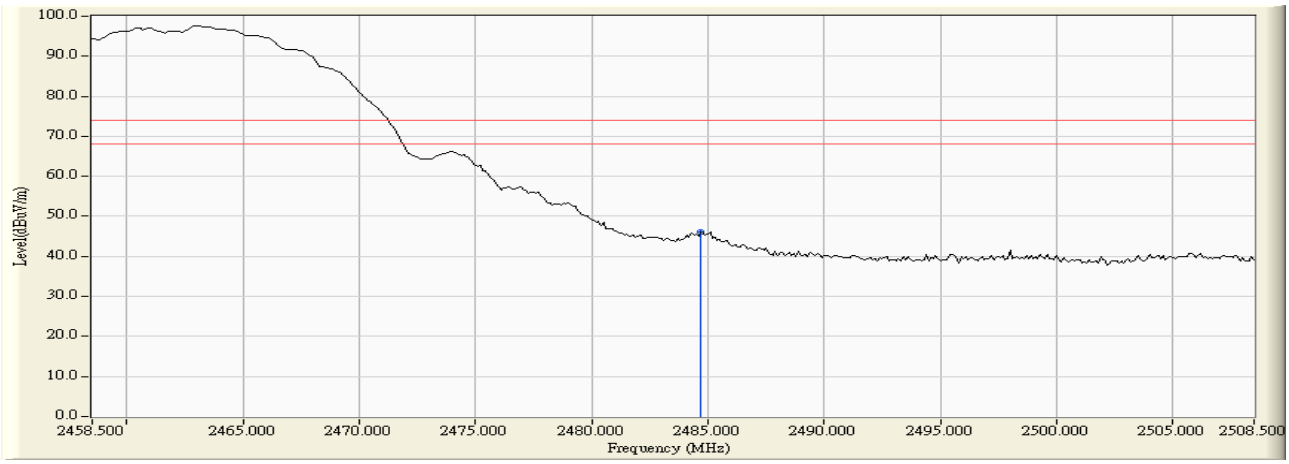
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless USB Dongle
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter 802.11b

RF Radiated Measurement (Horizontal):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11(Peak)	2484.700	-6.467	52.698	46.231	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)



Note:

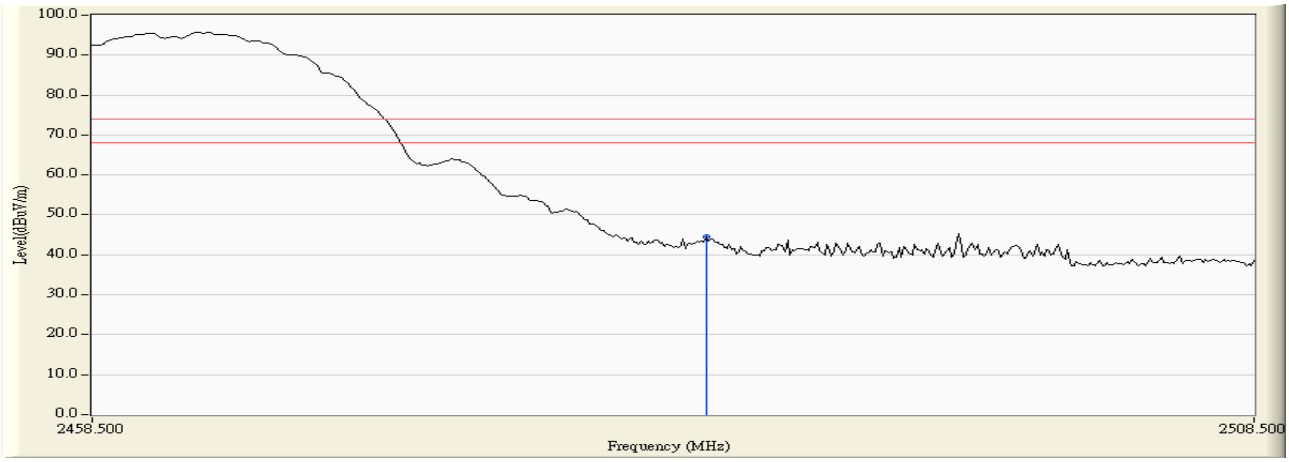
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless USB Dongle
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter 802.11b

RF Radiated Measurement (Vertical):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11(Peak)	2484.800	-6.467	51.052	44.586	74.00	54.00	Pass

Figure Channel 11: **Vertical (**Peak**)**



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless USB Dongle
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter 802.11g

RF Radiated Measurement (Horizontal):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1 (Peak)	2389.300	-6.770	71.790	65.020	74.00	54.00	Pass
1 (Average)	2389.300	-6.770	41.917	35.147	74.00	54.00	Pass

Figure Channel 1: **Horizontal** (Peak)

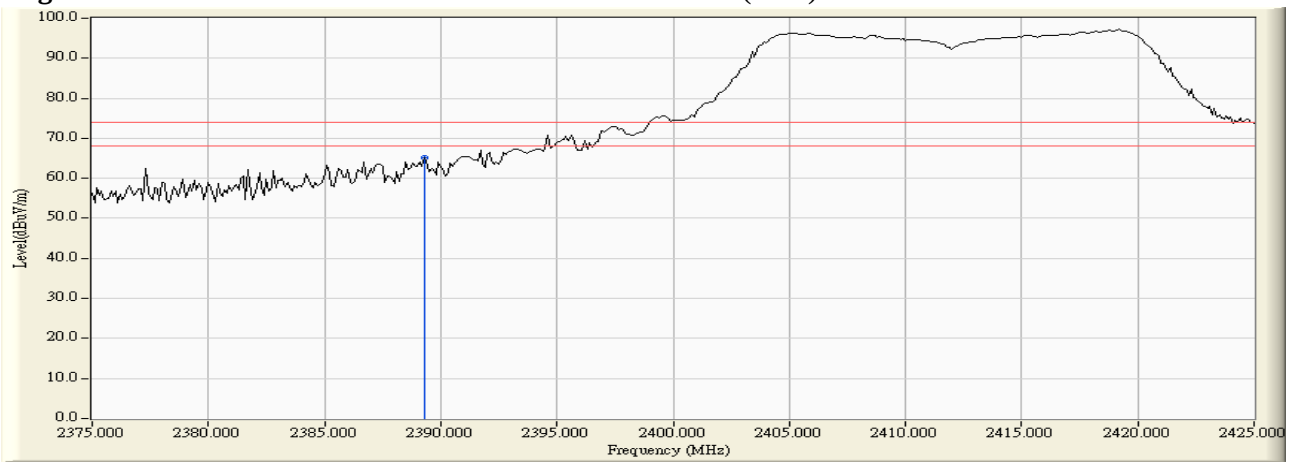
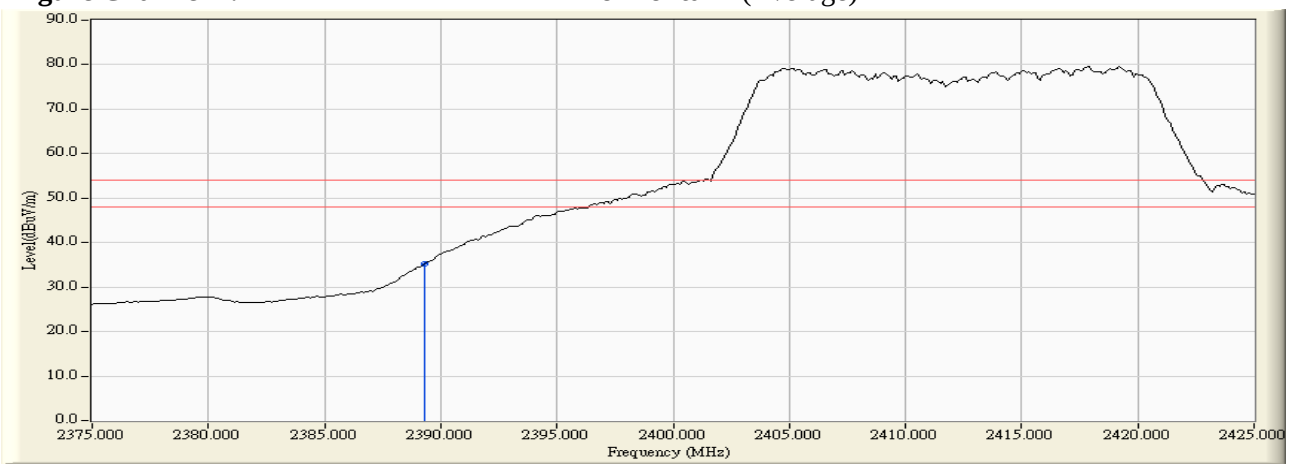


Figure Channel 1: **Horizontal** (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless USB Dongle
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter 802.11g

RF Radiated Measurement (Vertical):

Channel	Frequency (MHz)	Correct Fcator (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1 (Peak)	2388.000	-6.774	69.149	62.375	74.00	54.00	Pass
1 (Average)	2388.000	-6.774	36.180	29.406	74.00	54.00	Pass

Figure Channel 1: **Vertical** (Peak)

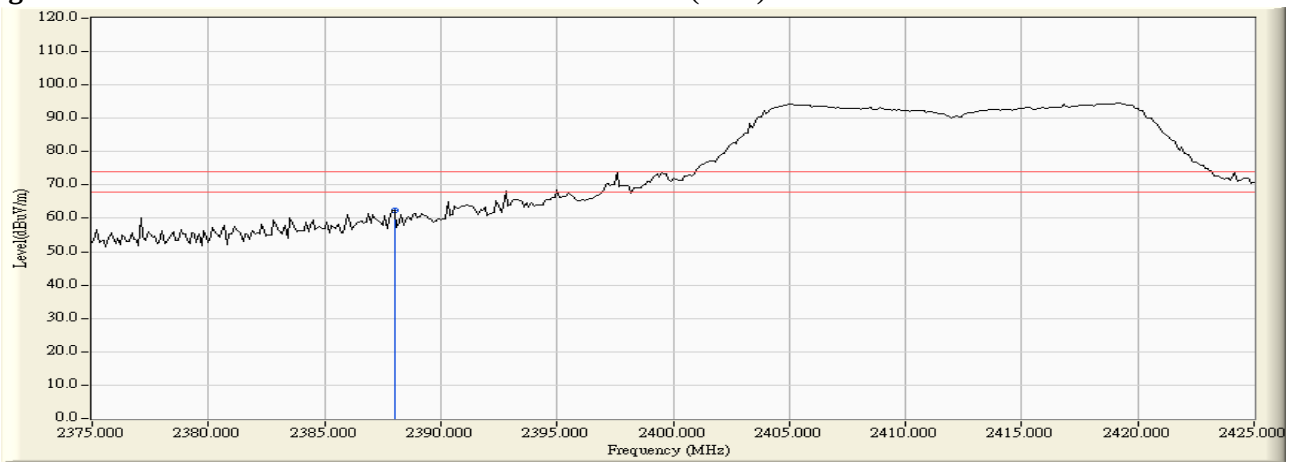
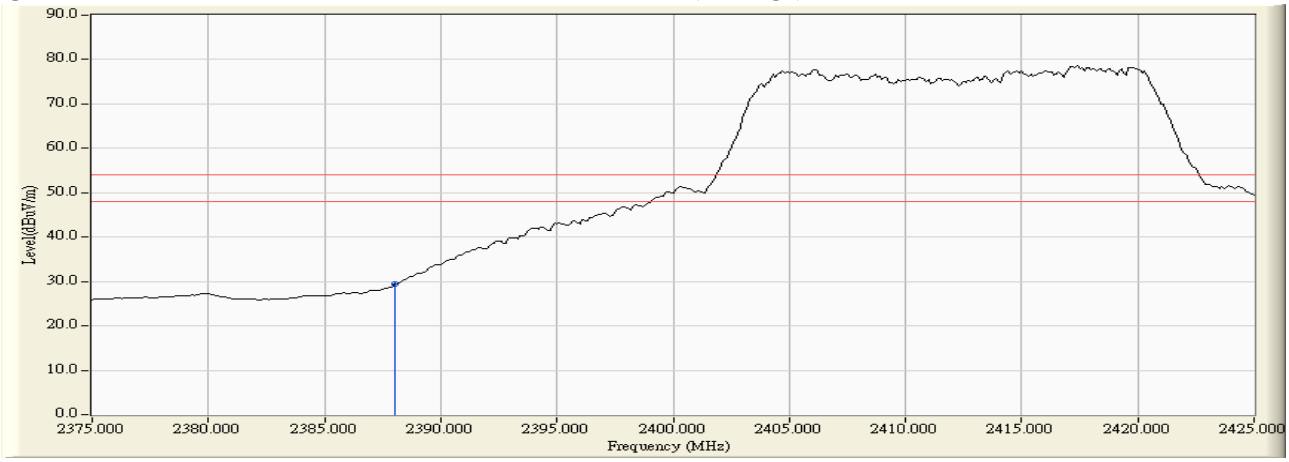


Figure Channel 1: **Vertical** (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

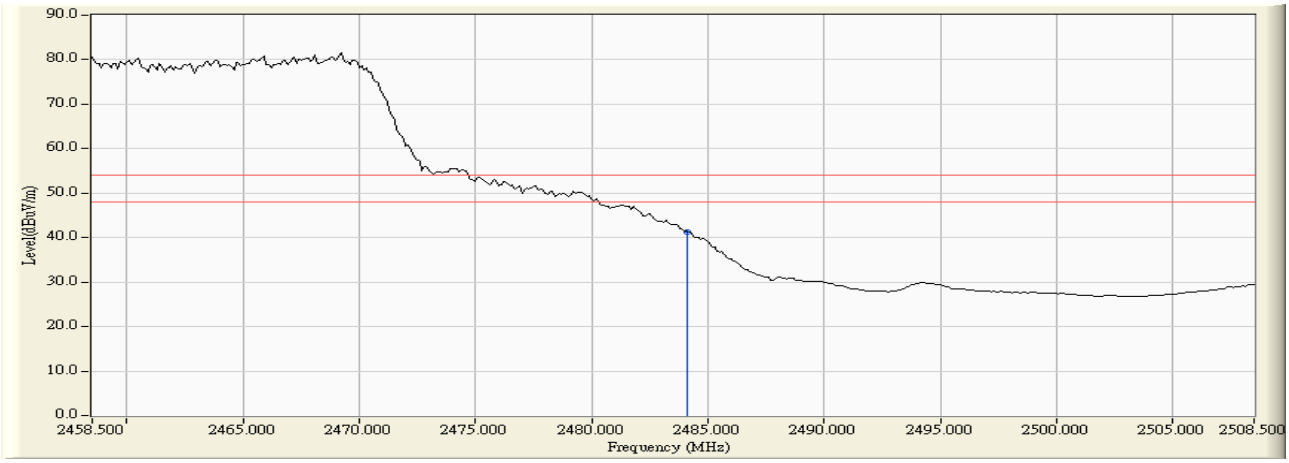
Product : Wireless USB Dongle
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter 802.11g

RF Radiated Measurement (Horizontal):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11(Peak)	2484.100	-6.467	75.735	69.268	74.00	54.00	Pass
11(Average)	2484.100	-6.467	47.614	41.147	74.00	54.00	Pass

Figure Channel 11: **Horizontal** (Peak)

Horizontal (Average)



Note:

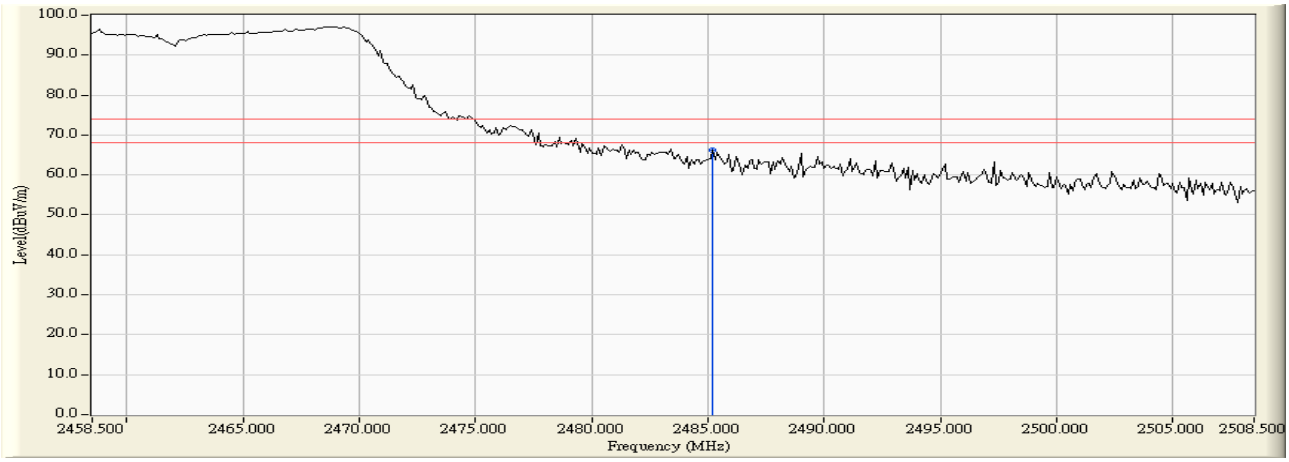
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless USB Dongle
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter 802.11g

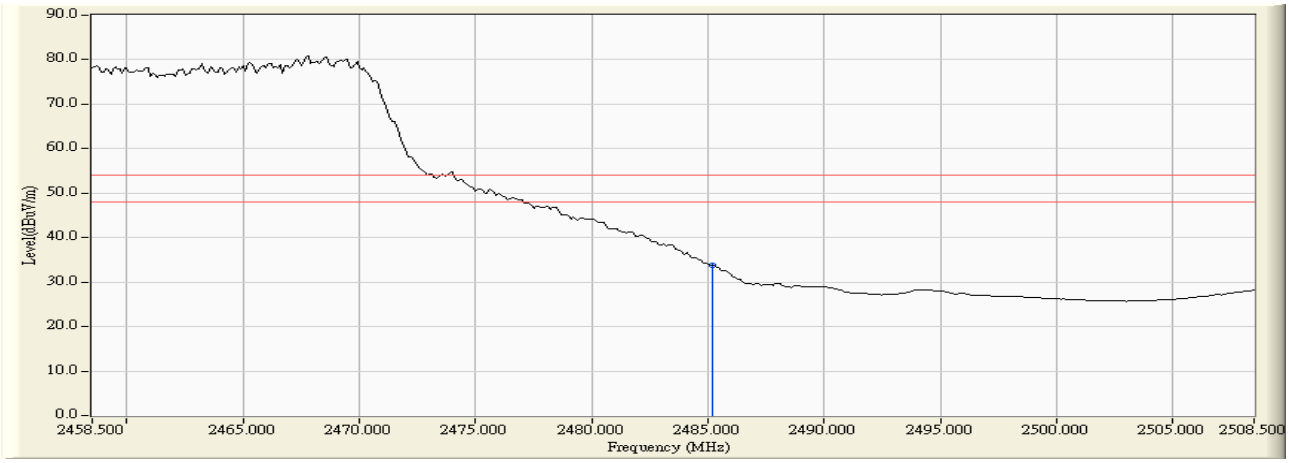
RF Radiated Measurement (Vertical):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11(Peak)	2485.200	-6.466	72.638	66.172	74.00	54.00	Pass
11(Average)	2485.200	-6.466	40.209	33.743	74.00	54.00	Pass

Figure Channel 11: **Vertical** (Peak)



Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

7. Occupied Bandwidth

7.1. Test Equipment

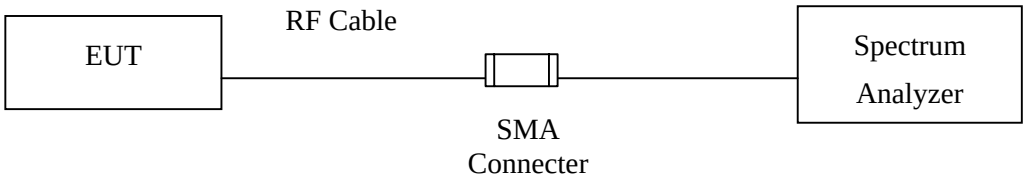
The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2008
X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
	Spectrum Analyzer	Agilent	N9010A / MY48030495	April, 2008

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

2. The test instruments marked with "X" are used to measure the final test results.

7.2. Test Setup



7.3. Test Procedures

The EUT was setup according to ANSI C63.4, 2003; tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Span greater than RBW.

7.4. Limits

The 6 dB bandwidth must be greater than 500 kHz.

7.5. Uncertainty

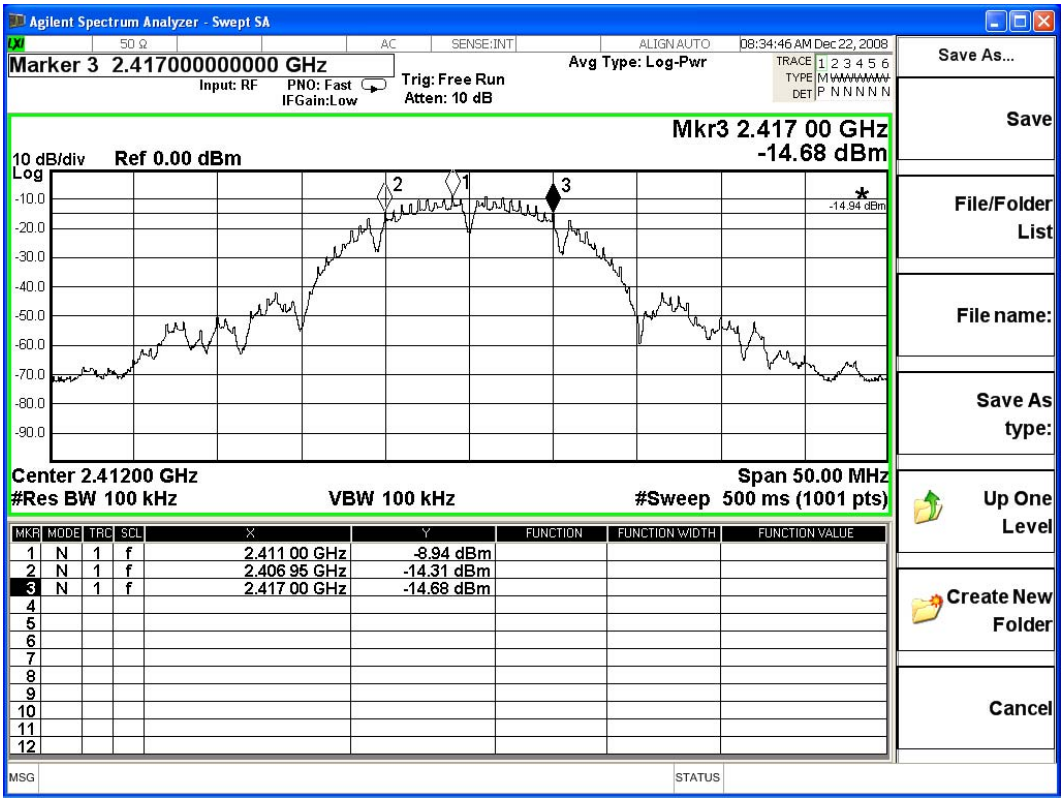
± 150Hz

7.6. Test Result of Occupied Bandwidth

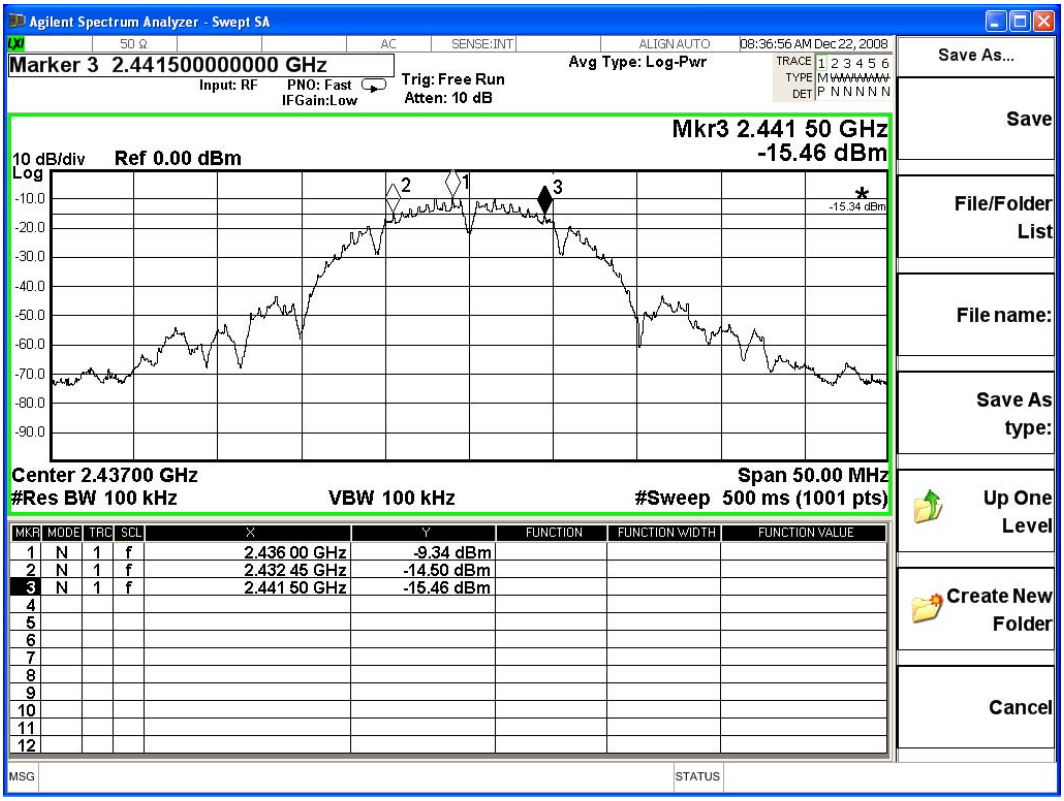
Product : Wireless USB Dongle
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter 802.11b

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1 (11Mbps)	2412.00	10500	>500	Pass
6 (11Mbps)	2437.00	9050	>500	Pass
11 (11Mbps)	2462.00	9000	>500	Pass

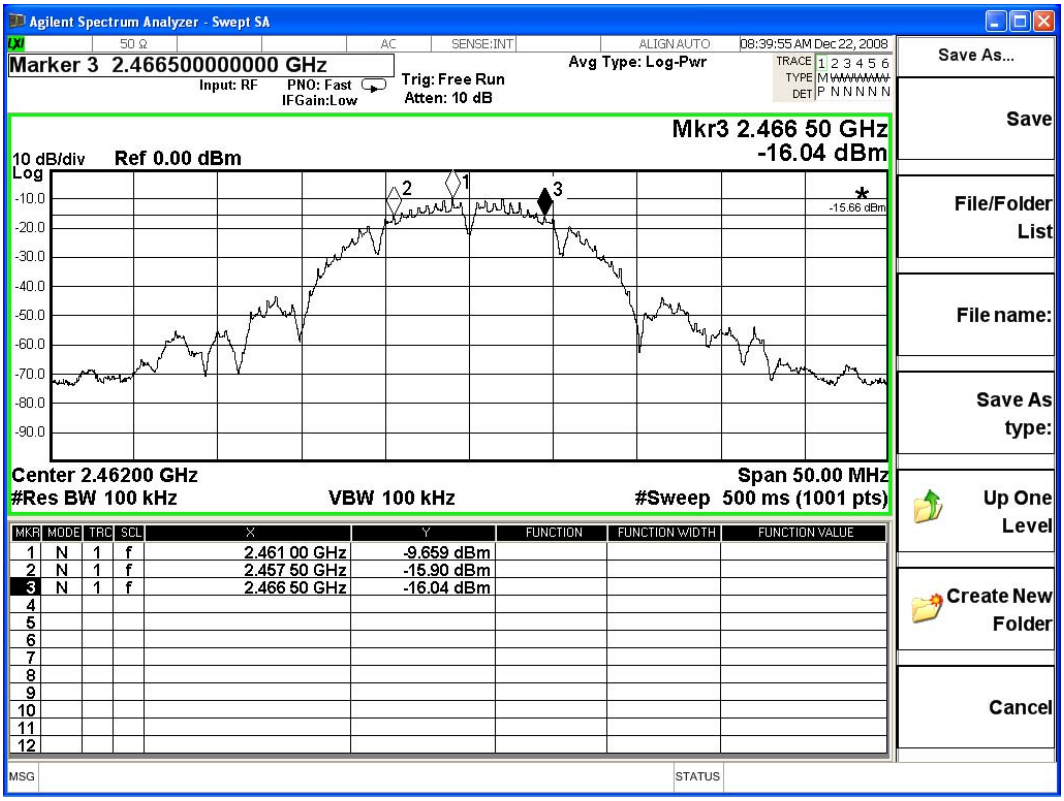
Channel 1:



Channel 6:



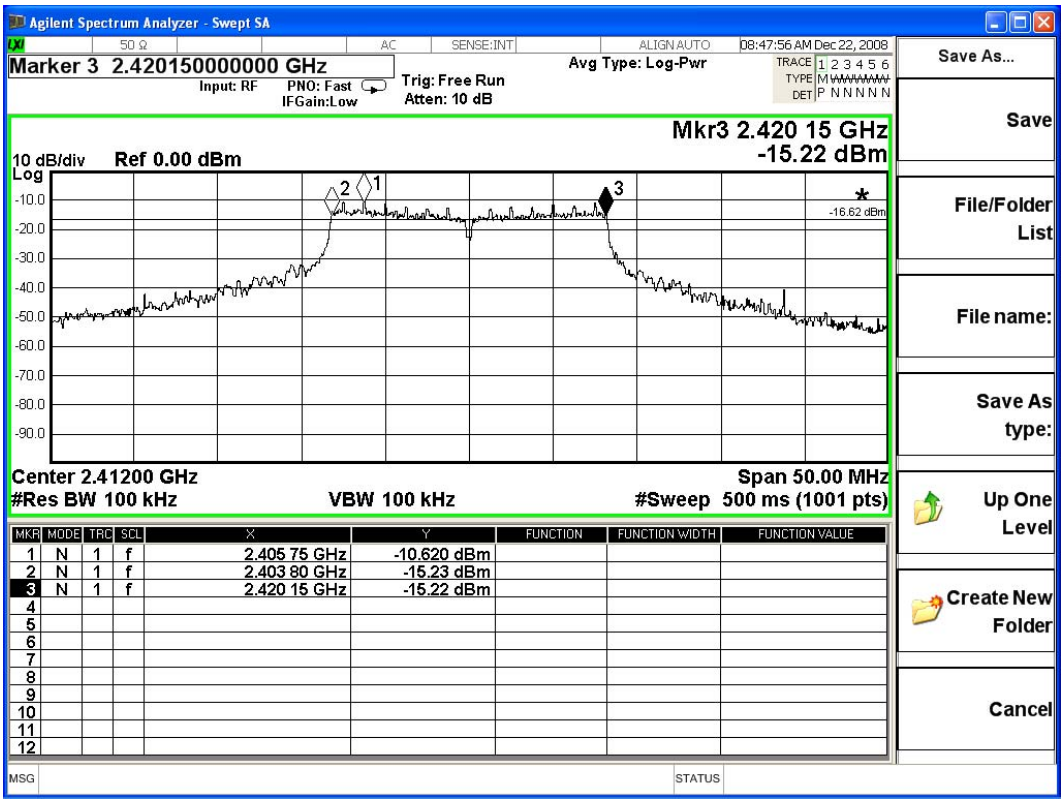
Channel 11:



Product : Wireless USB Dongle
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter 802.11g

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1 (54Mbps)	2412.00	16350	>500	Pass
6 (54Mbps)	2437.00	16350	>500	Pass
11 (54Mbps)	2462.00	16350	>500	Pass

Channel 1:



Channel 6:

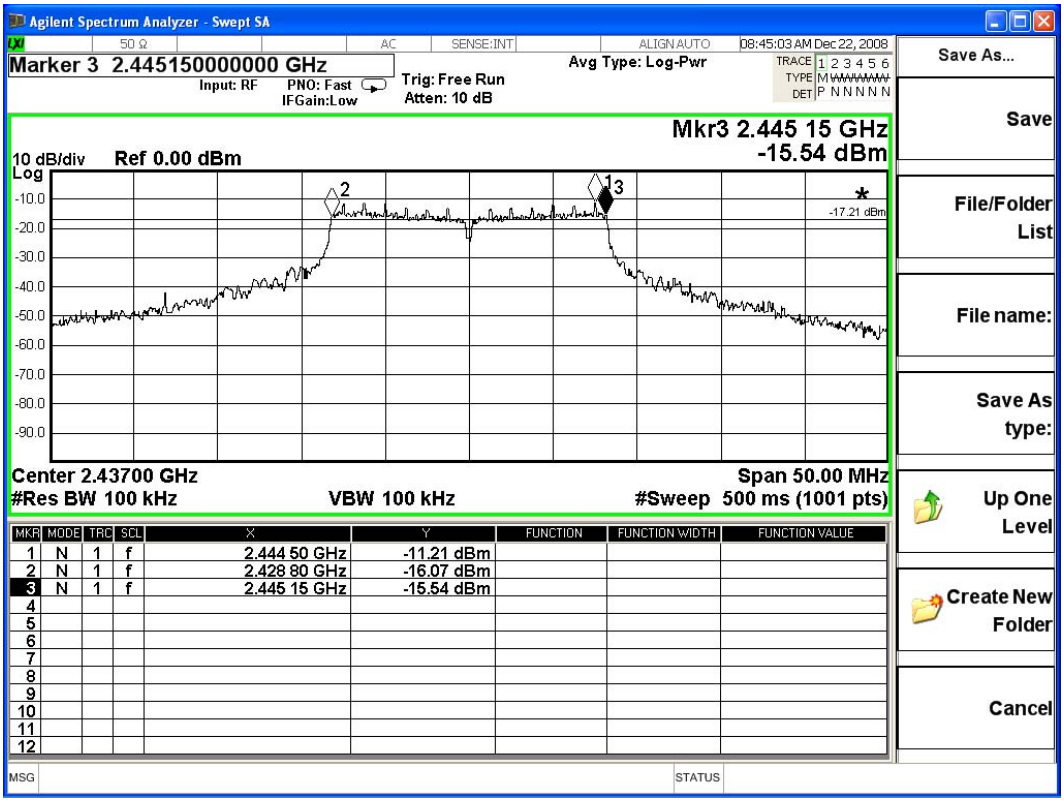
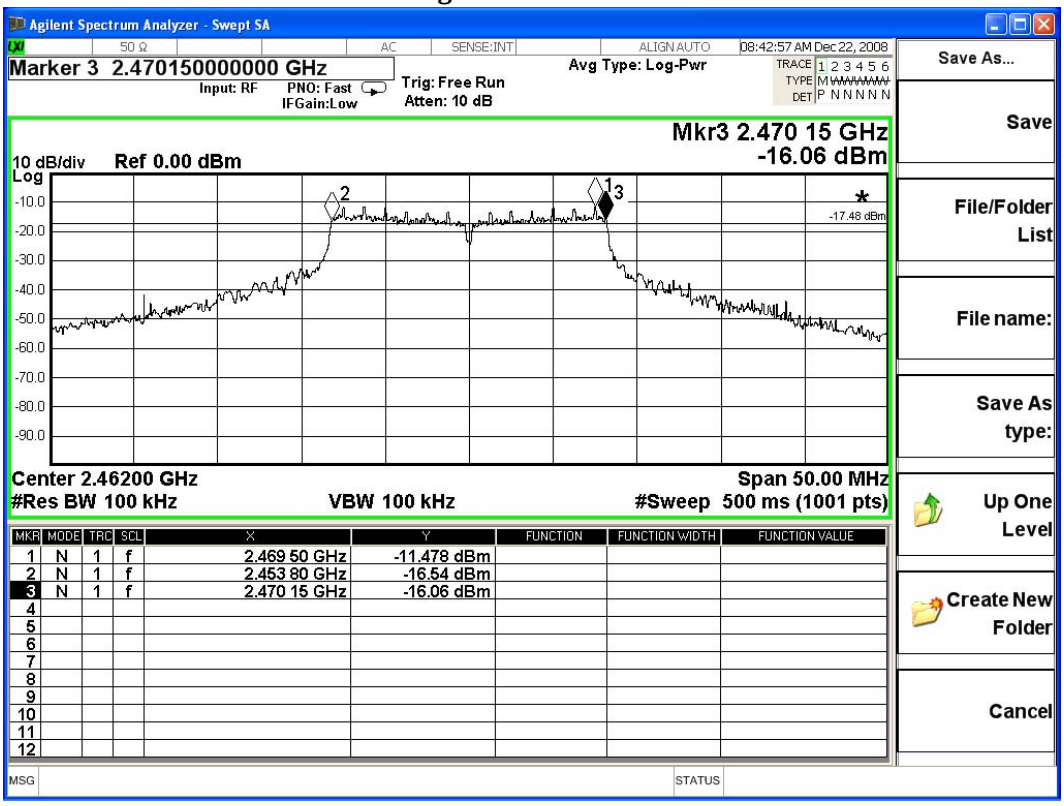


Figure Channel 11:



8. Power Density

8.1. Test Equipment

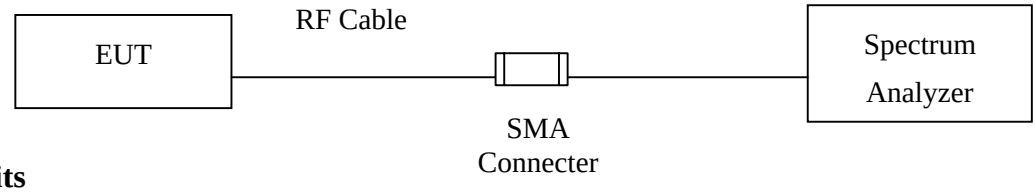
The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2008
X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
	Spectrum Analyzer	Agilent	N9010A / MY48030495	April, 2008

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

2. The test instruments marked with "X" are used to measure the final test results.

8.2. Test Setup



8.3. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

8.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2003; tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW= 3 kHz, VBW=10KHz, Sweep time=(SPAN/3KHz), detector=Peak detector

8.5. Uncertainty

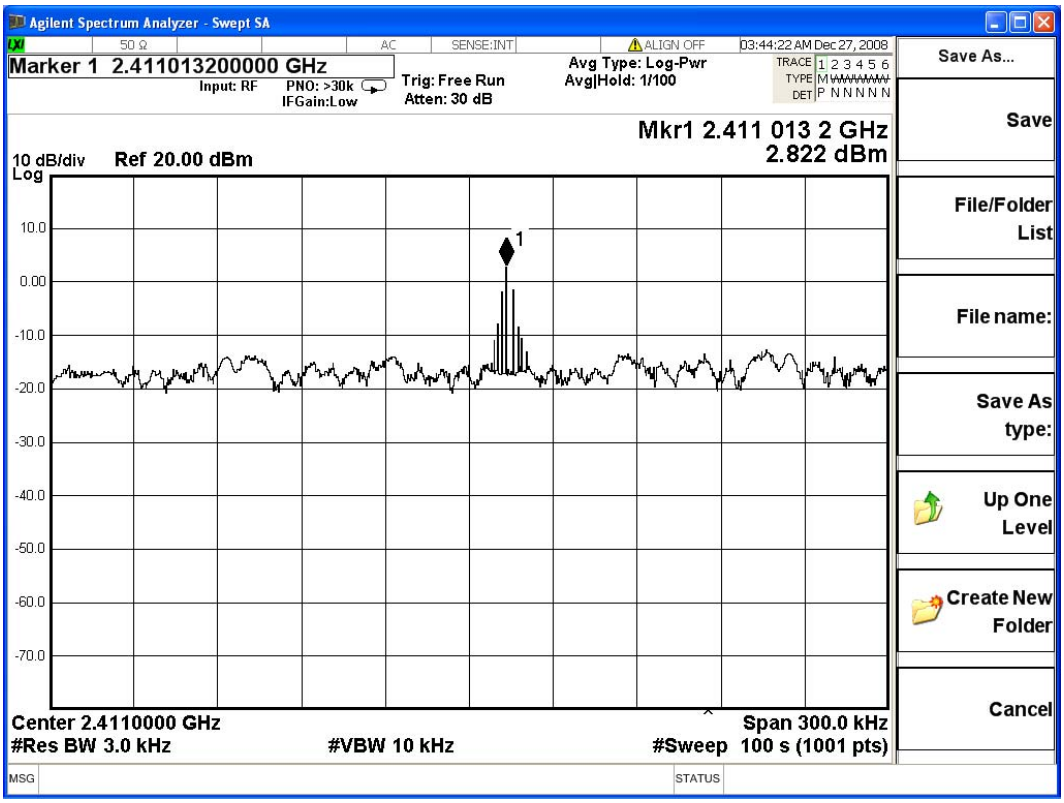
± 1.27 dB

8.6. Test Result of Power Density

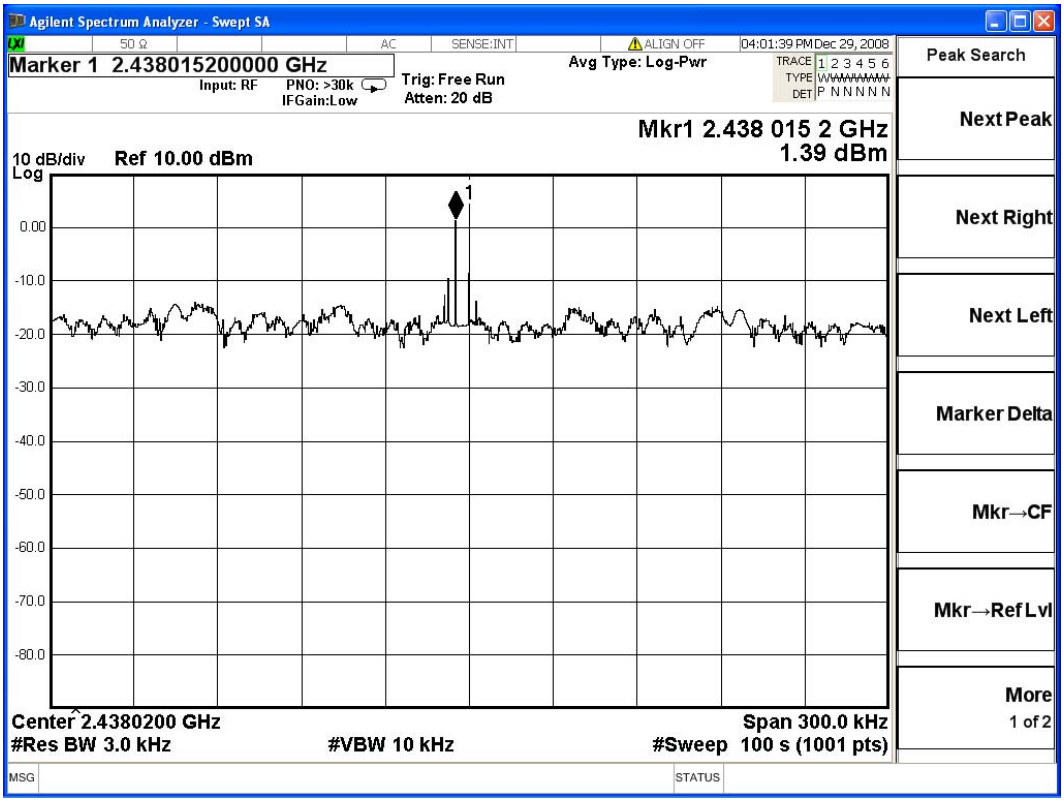
Product : Wireless USB Dongle
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter 802.11b

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
1 (11Mbps)	2412.00	2.882	< 8dBm	Pass
6 (11Mbps)	2437.00	1.390	< 8dBm	Pass
11 (11Mbps)	2462.00	1.020	< 8dBm	Pass

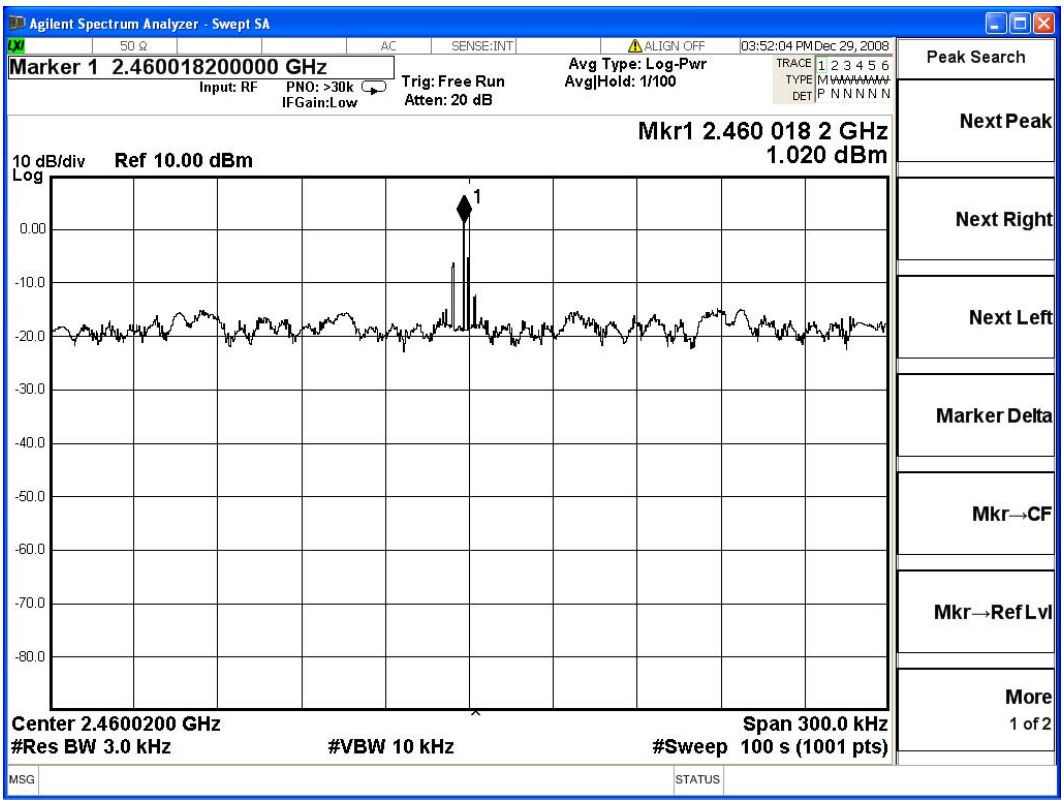
Channel 1:



Channel 6:



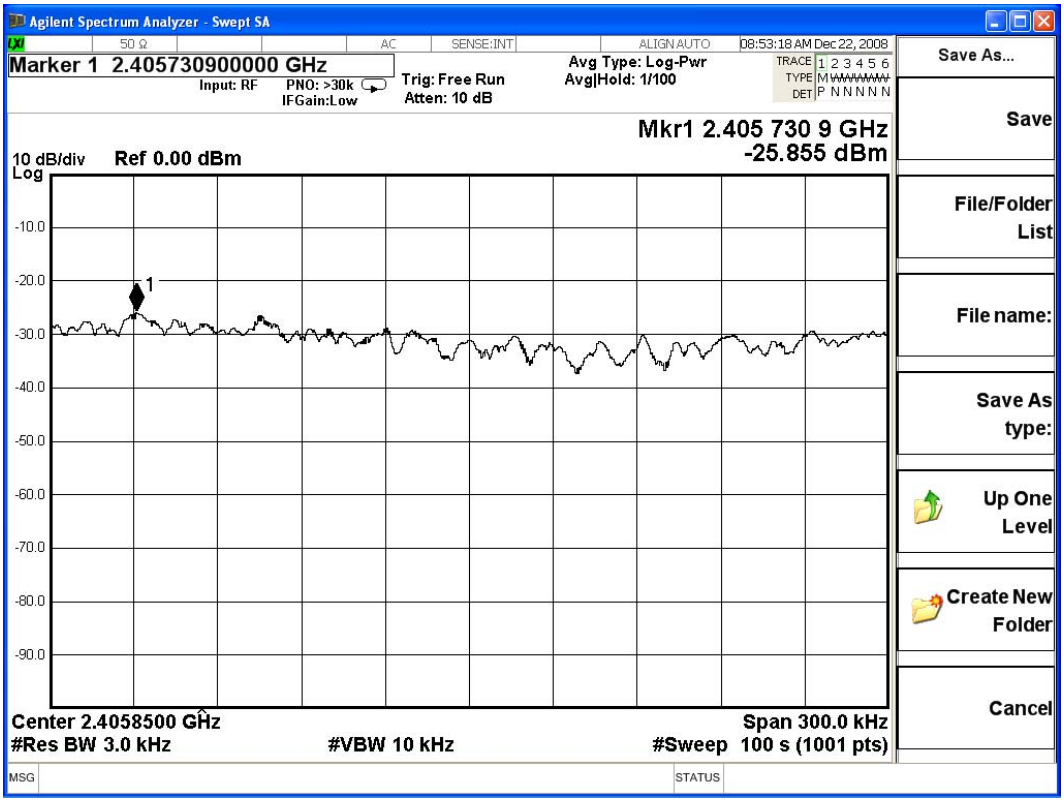
Channel 11:



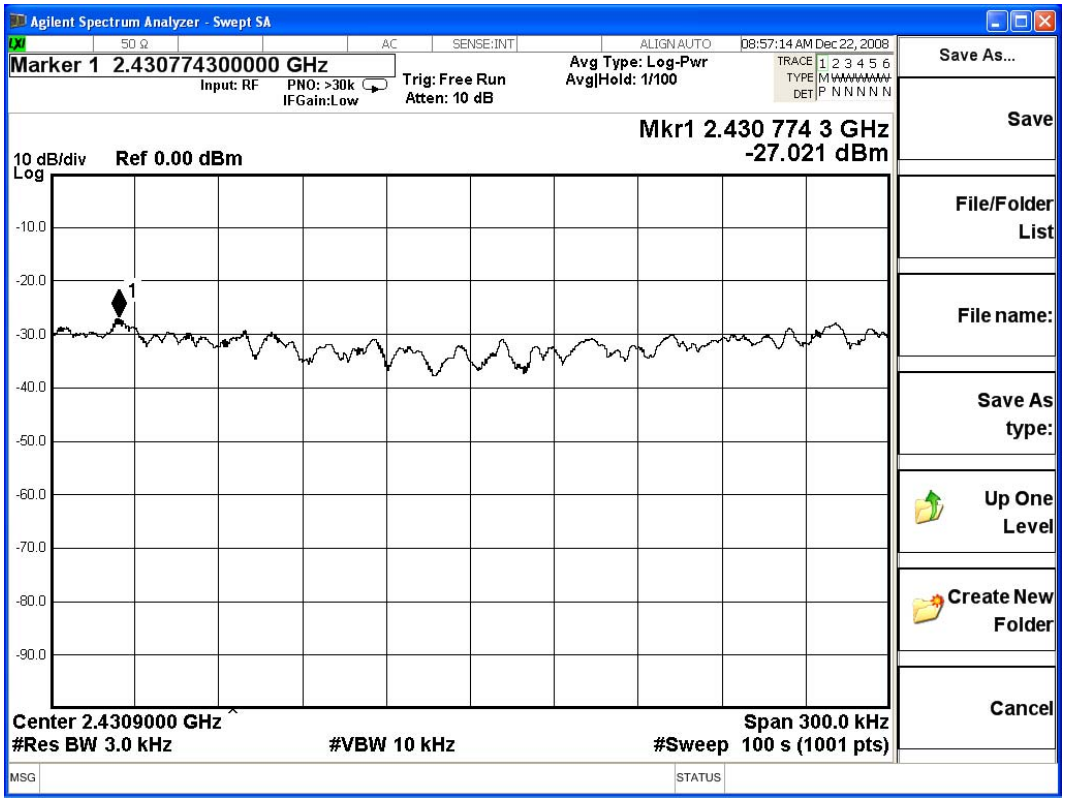
Product : Wireless USB Dongle
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter 802.11g

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
1 (54Mbps)	2412.00	-25.855	< 8dBm	Pass
6 (54Mbps)	2437.00	-27.021	< 8dBm	Pass
11 (54Mbps)	2462.00	-28.024	< 8dBm	Pass

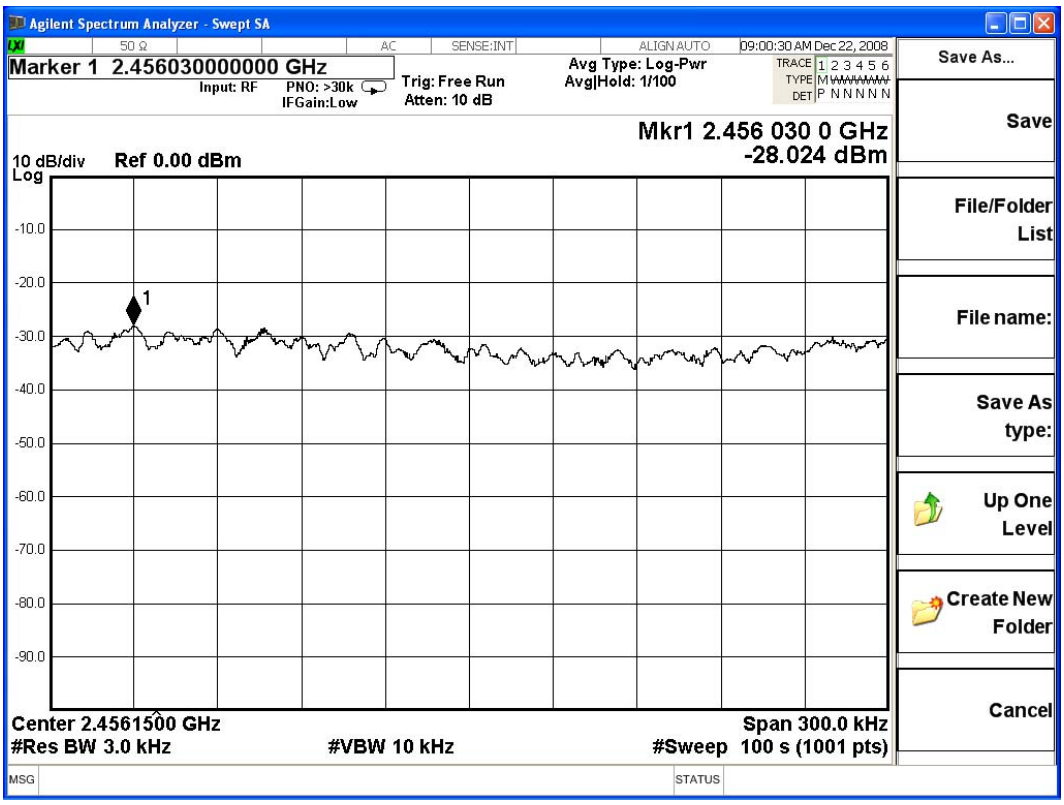
Channel 1:



Channel 6:



Channel 11:



9. EMI Reduction Method During Compliance Testing

No modification was made during testing.